



US009375076B2

(12) **United States Patent**  
**Weis et al.**

(10) **Patent No.:** **US 9,375,076 B2**  
(45) **Date of Patent:** **Jun. 28, 2016**

(54) **BROOM HEAD**

(75) Inventors: **Norbert Weis**, Weinheim (DE);  
**Hans-Jörg Clemen**, Heidelberg (DE);  
**Marc Hunger**, Viernheim (DE)

(73) Assignee: **Carl Freudenberg KG**, Weinheim (DE)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/366,027**

(22) PCT Filed: **Sep. 5, 2012**

(86) PCT No.: **PCT/EP2012/003715**  
§ 371 (c)(1),  
(2), (4) Date: **Jul. 1, 2014**

(87) PCT Pub. No.: **WO2013/091740**  
PCT Pub. Date: **Jun. 27, 2013**

(65) **Prior Publication Data**  
US 2014/0331426 A1 Nov. 13, 2014

(30) **Foreign Application Priority Data**  
Dec. 22, 2011 (DE) ..... 10 2011 122 105

(51) **Int. Cl.**  
**A47L 13/12** (2006.01)  
**A46B 7/04** (2006.01)  
**A46B 9/04** (2006.01)  
**A46B 9/00** (2006.01)

(52) **U.S. Cl.**  
CPC . **A46B 7/04** (2013.01); **A46B 9/005** (2013.01);  
**A46B 9/04** (2013.01); **A47L 13/12** (2013.01);  
**A46B 9/00** (2013.01); **A46B 2200/302**  
(2013.01)

(58) **Field of Classification Search**  
CPC ..... A46B 9/04; A46B 2200/302; A46B 7/04;  
A46B 9/00; A46B 9/005; A47L 13/12  
USPC ..... 15/106, 111, 114, 115, 117, 159.1, 171,  
15/202  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

638,305 A \* 12/1899 Wightman ..... 119/612  
1,196,522 A \* 8/1916 Christiansen ..... 132/120  
(Continued)

FOREIGN PATENT DOCUMENTS

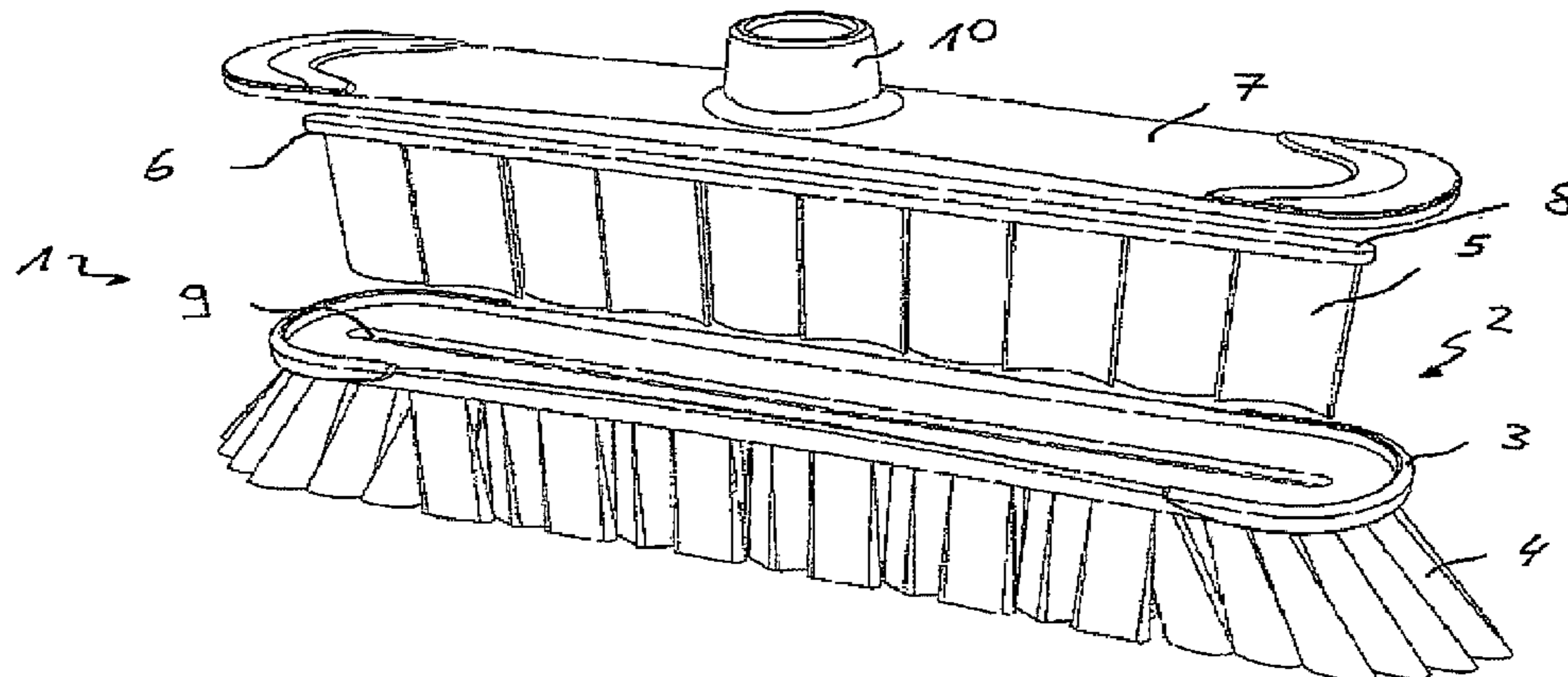
CN 101647683 A 2/2010  
DE 10332405 A1 2/2005  
(Continued)

*Primary Examiner* — Michael Jennings  
(74) *Attorney, Agent, or Firm* — Fraser Clemens Martin & Miller LLC; James D. Miller

(57) **ABSTRACT**

In respect of the problem of indicating a broom head (1) which can be produced such that its individual parts are easy to store, wherein the individual parts are fixed to one another following production of the broom head, said broom head (1) comprising a basic body (2) with a plate (3), from which project first cleaning elements (4) for directing towards a surface which is to be cleaned, wherein the plate (3) also has second cleaning elements (5), which assist the cleaning performance of the first cleaning elements (4), projecting from it, is characterized in that the second cleaning elements (5) are arranged on a module (6) which can be introduced, as a separate individual part, into an aperture (9) of the plate (3) such that the second cleaning elements (5) engage through the plate (3).

**15 Claims, 5 Drawing Sheets**



(56)

**References Cited**

U.S. PATENT DOCUMENTS

1,291,065	A *	1/1919	Melton	15/171
2,446,086	A *	7/1948	Hermans	132/120
2,488,056	A *	11/1949	Eisner et al.	401/278
2,518,765	A *	8/1950	Ecker	A47L 13/12 15/115
2,704,853	A *	3/1955	Gantz	15/168
3,034,165	A *	5/1962	Christian	15/247
3,619,845	A *	11/1971	Partridge et al.	15/117
4,932,425	A *	6/1990	Chen	132/119
4,988,228	A *	1/1991	Yeh	401/289
5,274,873	A *	1/1994	Shields	15/167.1
5,522,110	A *	6/1996	Borofsky	420/406
5,552,110	A	9/1996	Iba et al.	
6,182,671	B1 *	2/2001	Taylor et al.	132/116
6,217,124	B1 *	4/2001	Jespersen	300/21
6,261,156	B1 *	7/2001	Johnson et al.	451/41
7,159,950	B2 *	1/2007	Young-Chul	300/21
7,836,540	B2 *	11/2010	Vasilakes	A46B 15/0002 15/1.52

7,861,360	B2 *	1/2011	Malka	15/169
8,196,249	B1 *	6/2012	Spooner et al.	15/117
8,438,689	B2 *	5/2013	Noble	15/207.2
2003/0163884	A1 *	9/2003	Weihrauch	15/207.2
2004/0031116	A1 *	2/2004	Coleman	15/172
2004/0158948	A1 *	8/2004	Sander et al.	15/188
2005/0132517	A1 *	6/2005	Weckemann et al.	15/111
2006/0048324	A1 *	3/2006	Vassilopoulos	15/179
2008/0189890	A1 *	8/2008	Arnold et al.	15/117
2010/0132625	A1 *	6/2010	Dionne	119/602
2010/0199449	A1 *	8/2010	Ho et al.	15/207.2
2011/0239390	A1 *	10/2011	Park	15/160

FOREIGN PATENT DOCUMENTS

DE	10362035	A1	3/2005
DE	102008016637	A1	10/2009
EP	1595473	A1	11/2005
GB	2151467	A	7/1985
WO	2006122607	A1	11/2006

\* cited by examiner

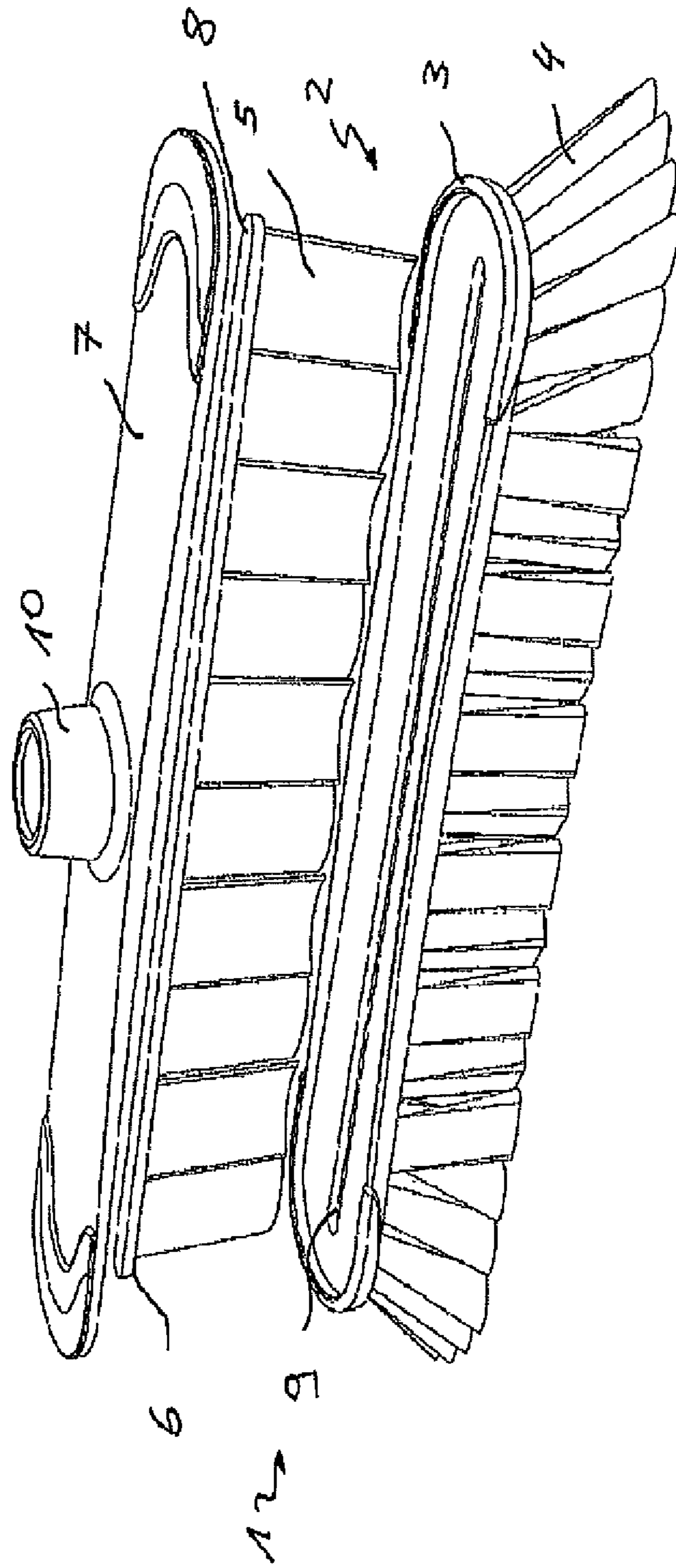


Fig. 1

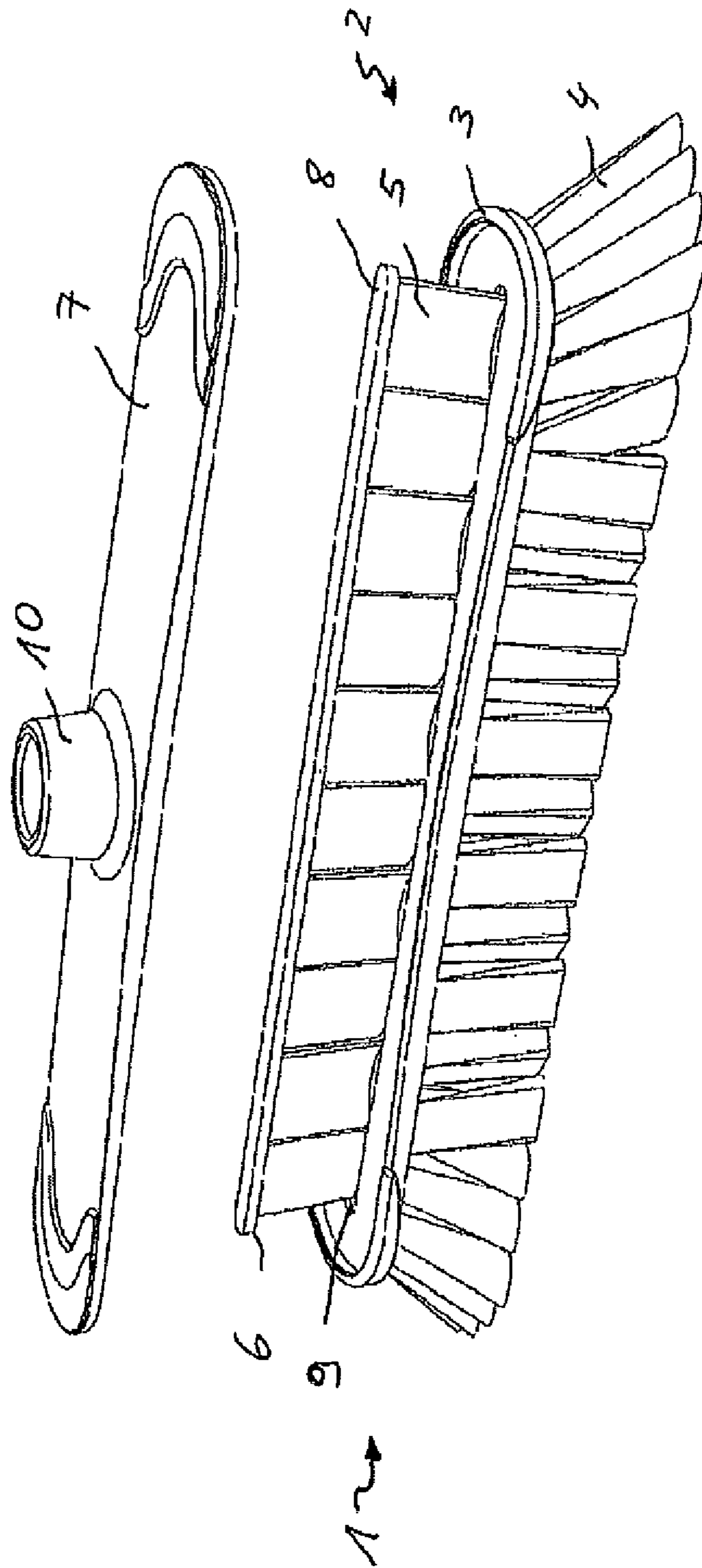


Fig. 2

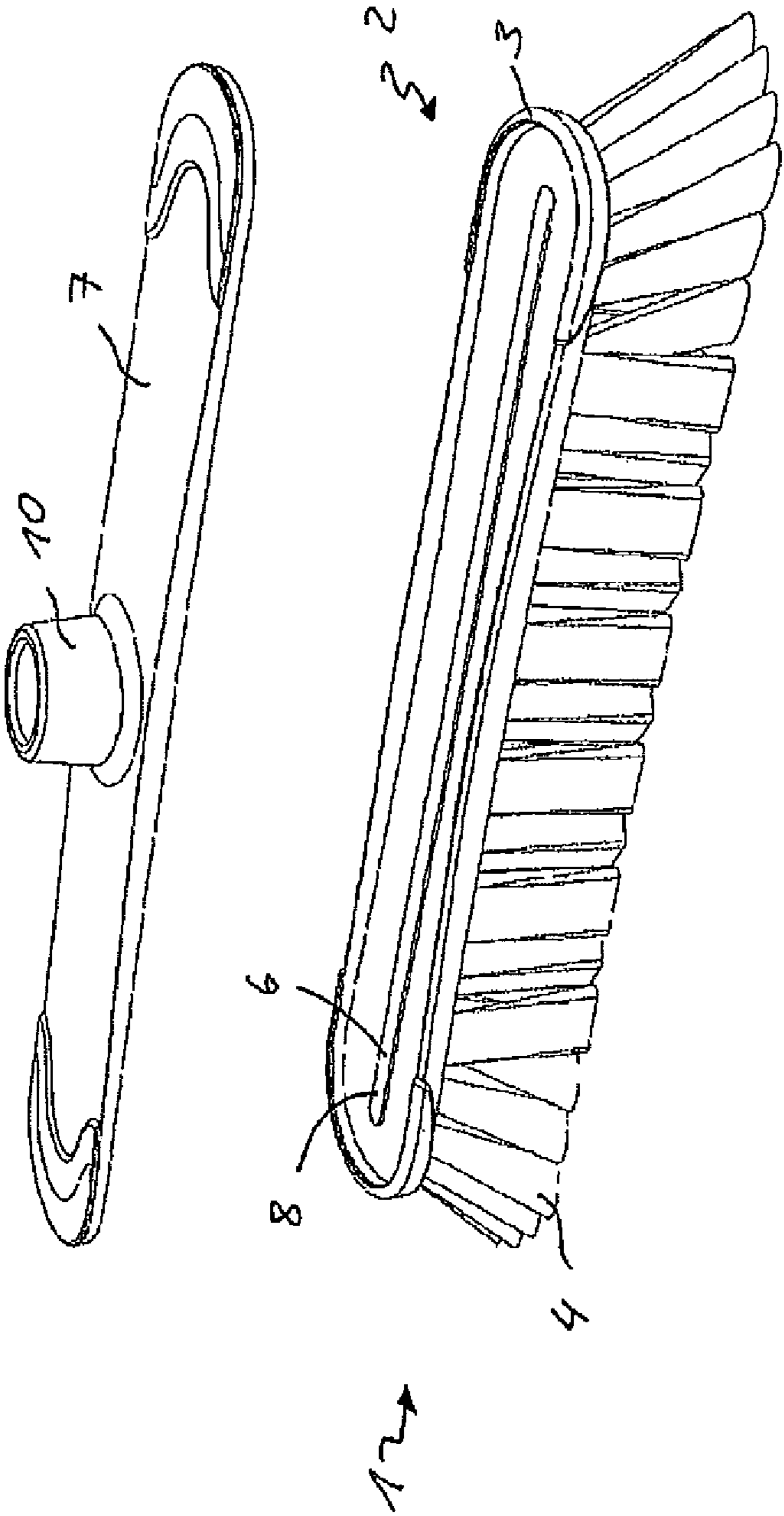


Fig. 3

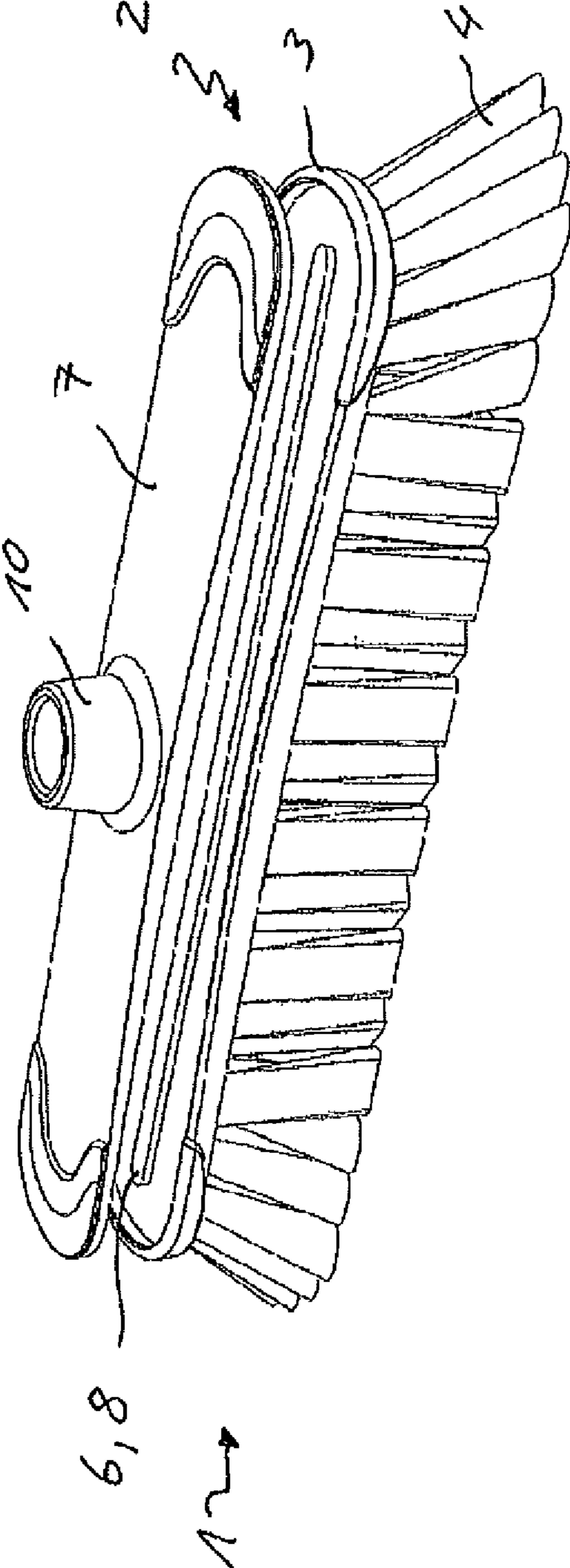


Fig. 4

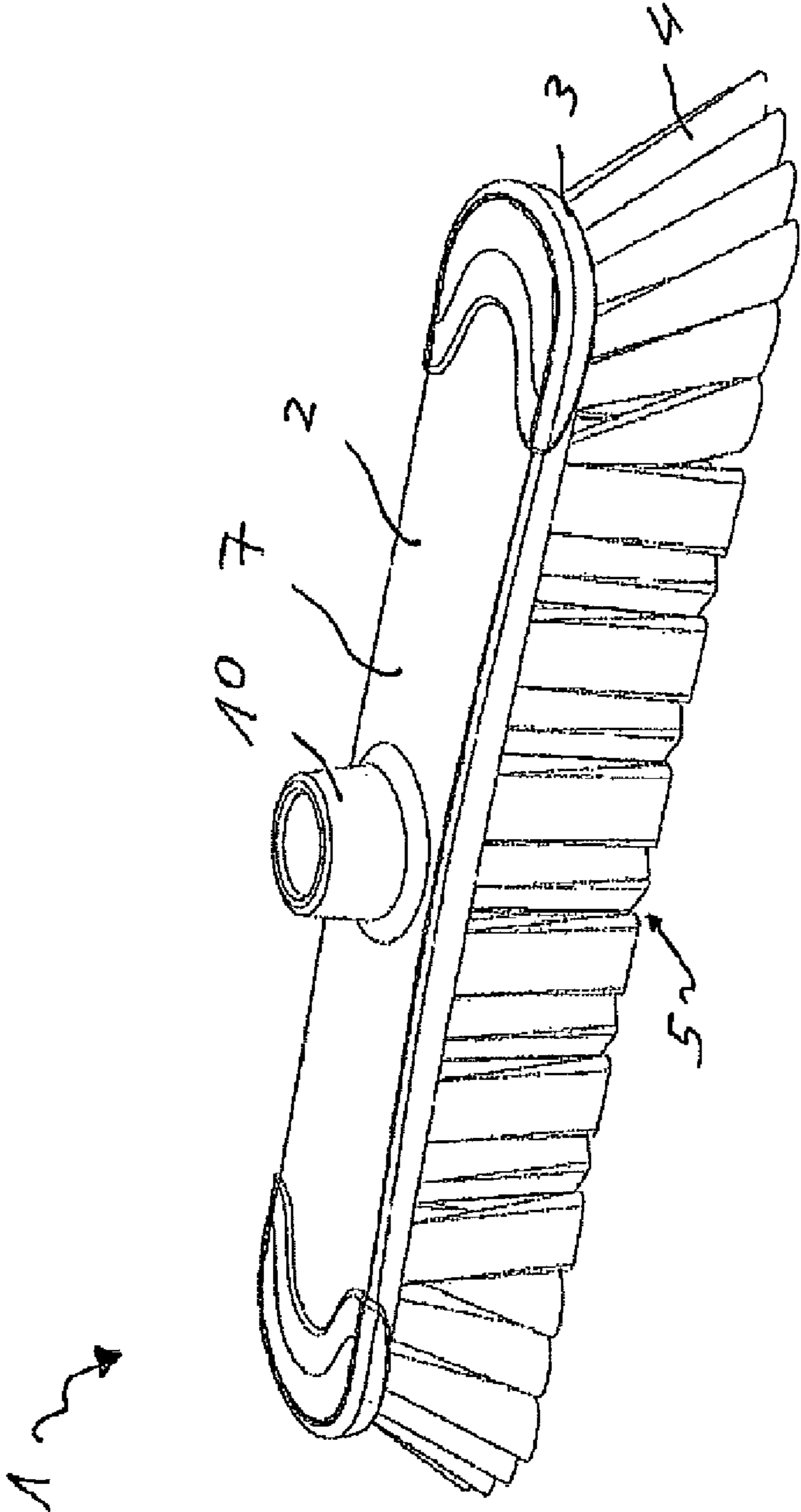


Fig. 5

**1****BROOM HEAD**CROSS-REFERENCE TO RELATED  
APPLICATIONS

This application is a United States national phase application based on PCT/EP2012/003715 filed Sep. 5, 2012 which claims the benefit of German Patent Application Serial No. 102011122105.4 filed Dec. 22, 2011. The entire disclosures of the above applications are hereby incorporated herein by reference.

## TECHNICAL FIELD

The invention relates to a broom head according to the preamble of patent claim 1.

## PRIOR ART

Broom heads, which can be connected to a handle, are known from the prior art. Such a broom head comprises a basic body with a plate, from which cleaning elements to be turned toward a surface to be cleaned project. Moreover, lamellae project from the plate in the direction of the surface to be cleaned and assist the cleaning capacity of the cleaning elements.

The lamellae can remove from a surface to be cleaned dirt particles or moisture which can be removed only inadequately by the cleaning elements, in particular bristles.

The lamellae may be fastened either to the plate or to a cap which has a receptacle for a handle. When a broom head is being manufactured, the plate and the cap are connected to each other in order to form the basic body. In this manufacturing method, however, considerable problems arise where stockkeeping is concerned, since both a plate with lamellae and a cap with lamellae are relatively bulky and difficult to store.

## PRESENTATION OF THE INVENTION

The object on which the invention is based, therefore, is to specify a broom head which can be manufactured so that its individual parts can easily be kept in stock, the individual parts being connected firmly to each other after the manufacture of the broom head.

The present invention achieves the abovementioned object by means of the features of patent claim 1.

According to the invention, the second cleaning elements are arranged on a module which can be inserted as a separate individual part into the plate. It was recognized, according to the invention, that a second module makes it possible to stack and store the plate and cap easily as flat individual parts, since these themselves have no second cleaning elements. The separate module likewise has a flat configuration and can therefore be stored easily. In a manufacturing process, these three individual parts can quickly be joined together captively and thus form a broom head. The flat individual parts allow simple and cost-effective stockkeeping and therefore cost-effective production of the broom head.

The object initially mentioned is consequently achieved.

The module could be fixed between the plate and a cap. The module can thereby be accommodated positively and/or in a materially integral manner between the plate and cap. The plate and cap may be adhesively bonded, welded or latched to one another.

The module could have a ridge, from which the second cleaning elements, in particular lamellae, project, the second

**2**

cleaning elements passing through an aperture in the plate. The ridge can serve as an abutment which can be laid against the plate. Moreover, a plurality of individual second cleaning elements arranged in the manner of a palisade can be gripped in their entirety and inserted into the plate.

The cap could have a receptacle for a handle. A broom handle can thereby be plugged onto or screwed to the broom head.

The first cleaning elements could be configured as bristles. The bristles may be manufactured from synthetic materials or from natural fibers.

The second cleaning elements could be manufactured from an elastomer. An elastomer, in particular rubber, can perform an outstanding wiping function.

The second cleaning elements could be manufactured from a foam. Foams are cost-effective and lightweight.

The second cleaning elements could be configured as lamellae. During sweeping, lamellae can pick up and brush away moisture especially effectively with their lamella surface or wiping surface. Moreover, lamellae can loosen stubborn dirt and catch hairs and smaller dirt particles.

The lamellae could have a straight, bent or curved configuration. The geometry of the lamellae may be selected according to the wiping function requirements. It is conceivable to use U-shaped, V-shaped, X-shaped, round or oval lamellae.

The broom head could be manufactured from three individual parts, to be precise from a plate with first cleaning elements, from a cap and from the module. These three individual parts can easily be joined together by hand.

## BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 shows an exploded illustration of a broom head which is composed of three individual parts,

FIG. 2 shows an illustration in which the module is inserted partially into the plate,

FIG. 3 shows an illustration in which the module is inserted completely into the plate,

FIG. 4 shows an illustration in which the cap is placed onto the plate, and

FIG. 5 shows an illustration of the ready-assembled broom head.

## IMPLEMENTATION OF THE INVENTION

FIG. 1 shows an exploded illustration of a broom head 1 comprising a basic body 2 with a plate 3, from which first cleaning elements 4 to be turned toward a surface to be cleaned project, lamellae, which assist the cleaning capacity of the first cleaning elements 4, also projecting as second cleaning elements 5 from the plate 3.

The second cleaning elements 5, to be precise the lamellae, are arranged on a module 6 which can be inserted as a separate individual part into an aperture 9 of the plate 3 in such a way that the second cleaning elements 5 pass through the plate 3.

The second cleaning elements 5 are arranged on a module 6 which can be inserted as a separate individual part into the plate 3. The module 6 can be fixed between the plate 3 and a cap 7.

FIG. 2 shows that the module 6 has a ridge 8, from which the lamellae project, the lamellae passing through an aperture 9 in the plate 3. The aperture 9 is configured as an elongate slot. A plurality of lamellae are arranged on the ridge 8 and can be introduced together in their entirety into the aperture 9.

The cap 7 has a receptacle 10 for a handle. The receptacle 10 is formed integrally with the cap 7.



3

The first cleaning elements **4** are configured as bristles. The second cleaning elements **5** are configured as lamellae. The lamellae are surrounded on all sides by the bristles.

The lamellae are curved and have an essentially U-shaped configuration. The lamellae are manufactured from an elastomer. The individual lamellae are arranged in such a way that a convexly curved lamella surface is followed along the ridge **8** by a concavely curved lamella surface.

FIGS. **3**, **4** and **5** show that the broom head **1** is manufactured from three individual parts, to be precise from a plate **3** with first cleaning elements **4**, from a cap **7** and from the module **6**. FIG. **5** shows the broom head **1** in the ready-assembled state. The three individual parts form the basic body **2**.

The invention claimed is:

**1.** A broom head comprising:

a plate having an aperture formed therein therethrough, the aperture passing from a first face of the plate to a second face of the plate, and a plurality of first cleaning elements extending outwardly therefrom from the second face of the plate towards a surface to be cleaned;

a module having a plurality of second cleaning elements extending outwardly therefrom, an entirety of the second cleaning elements received through the aperture to extend towards the surface to be cleaned, wherein the second cleaning elements are configured as lamellae and the entire module has a flat configuration in the outwardly extending direction of the second cleaning elements;

a cap coupled to the first face of the plate, the module fixed between the plate and the cap; and  
wherein the cap includes a receptacle formed thereon configured for receiving a handle.

4

**2.** The broom head of claim **1**, wherein the module includes a ridge having the second cleaning elements arranged thereon and extending outwardly therefrom.

**3.** The broom head of claim **2**, wherein the aperture is configured as an elongate slot.

**4.** The broom head of claim **2**, wherein the ridge serves as an abutment that is laid against the plate.

**5.** The broom head of claim **1**, wherein the first cleaning elements are configured as bristles.

**6.** The broom head of claim **1**, wherein the second cleaning elements are manufactured from an elastomer.

**7.** The broom head of claim **1**, wherein the second cleaning elements are manufactured from a foam.

**8.** The broom head of claim **1**, wherein each of the second cleaning elements has one of a straight configuration, a bent configuration, and a curved configuration.

**9.** The broom head of claim **1**, wherein the cap, the plate, and the module are separately formed from each other and cooperate with each other to form a unitary basic body.

**10.** The broom head of claim **1**, wherein the plate and the cap are one of adhesively bonded, welded, and latched to one another.

**11.** The broom head of claim **1**, wherein the second cleaning elements are arranged as a palisade.

**12.** The broom head of claim **1**, wherein the second cleaning elements are surrounded on all sides by the first cleaning elements.

**13.** The broom head of claim **1**, wherein the lamellae are one of U-shaped, V-shaped, and X-shaped.

**14.** The broom head of claim **1**, wherein the lamellae are one of round and oval.

**15.** The broom head of claim **1**, wherein the lamellae are arranged as an alternating series of lamellae having convexly curved and concavely curved surfaces.

\* \* \* \* \*